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State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT

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Deputy Director
Responsible Party Remedial Action

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Deputy Director
Hazardous Waste Operations

16 JUN 1989

IN THE MATTER OF
GAF CHEMICALS CORPORATION
LINDEN

ADMINISTRATIVE
CONSENT
ORDER

This Order is issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (hereinafter "NJDEP" or the "Department") by N.J.S.A. 13:1D-1 et seq. and the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., and the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq., and duly delegated to the Assistant Director for Responsible Party Cleanups for the Division of Hazardous Waste Management pursuant to N.J.S.A. 13:1B-4.

FINDINGS

1. The GAF Chemicals Corporation, an indirect wholly owned subsidiary of GAF Corporation, presently owns and operates a chemical manufacturing facility located on South Wood Avenue, Block 587, Lots 1 and 2.1, City of Linden, Union County, New Jersey (hereinafter "the Site"). Hereinafter, the term "GAF" is understood to refer to GAF Chemicals Corporation and its predecessors.

2. Dyestuff and pigment manufacturing began at the Site in 1919. The Site has been continuously utilized as a chemical manufacturing facility from 1919 through to the present. Wastes from the Site operations have been disposed of both on and off site. On-site waste disposal facilities, which are also solid waste management units pursuant to the Resource Conservation and Recovery Act (hereinafter "RCRA") and the Hazardous and Solid Waste Amendments (hereinafter "HSWA"), include, but are not limited to, two landfills that are not currently used, a network of unlined topographical depressions and channels (hereinafter "the ditch system") used to convey waste waters, a waste water treatment facility (hereinafter "WWTF"), and a former indoor storage area for drummed hazardous wastes. GAF asserts that not all of the above listed units are solid waste management units for the purposes of RCRA. GAF currently conducts operations such as chemical manufacturing, warehousing, administration, production, quality control laboratories, maintenance, and technical services in eleven buildings onsite. In addition, there are six inactive buildings at the Site.

3. GAF has advised the Department that Grasselli Chemicals Company began operations in this general area of Linden in 1885, although the

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portion of the former Grasselli property, which is now owned by GAF, was not utilized for chemical manufacturing until approximately 1919. It became Grasselli Dyestuff Company and was subsequently incorporated in 1929 as American I.G. Chemical Corporation, which was owned by I.G. Farbenindustrie A.G., a German company. The U.S. company's name was changed in 1939 to General Aniline and Film Corporation. In 1942, 98% of the company stock was seized by the United States Justice Department as a war asset and the facility was operated by the U.S. Government as Alien Property Custodian until 1965, when the U.S. Government sold the stock to the public in a public offering. On April 24, 1968, General Aniline and Film Corporation changed its name to GAF Corporation. In 1986, GAF Chemicals Corporation was incorporated, and all of the assets of the former Chemicals Division of GAF Corporation were transferred to GAF Chemicals Corporation.

4. GAF has advised the Department that the product categories that have been manufactured at the Site include surfactants, dyestuffs, pigments, industrial chemicals, and metal speciality products. The following general categories of compounds were the primary products manufactured by the various operators of the facility during the time frames specified in paragraph number 3:

<u>Production Commenced</u>	<u>Materials Produced</u>	<u>Production Ceased</u>
1919	Dyestuffs	1974
1935	Igepons (Surfactants)	Still in production
1940	Igepals (Surfactants)	Still in production
1941	Carbonyl Iron Powders (Iron Pentacarbonyl)	Late 1940s
1945	Reppe Chemistry Pilot Plant	1957
1955	Caustic Chlorine	1971
1957	Ethylene Oxide	1971
1958	Phosphate Ester Surfactants	Still in production
1962	Agricultural Herbicides, Amino Type Compounds including Amiben	1977
1963	Low Foamers (Surfactants)	Still in production
1964	Polyclar (Polyvinyl pyrrolidone, food grade beer clarifier)	1968
1965	Gantrez Half Esters	1969
1966	Ganex	Still in production
1970	Gafquat 755	Still in production
1975	Propoxylations (Propylene Oxide Surfactants)	Still in production
1976	Tetrahydrofuran	Still in production

Currently, only tetrahydrofuran, surfactants, Gafquat 755 and Ganex are manufactured by GAF at the site.

5. Past chemical manufacturing operations at the Site generated numerous solid and liquid wastes including, but not limited to:

- a. Phenol
- b. Arsenic Wastes including arsenic acid
- c. Mercury Compounds (entrained metallic mercury in dilute sulfuric acid solution, mercuric sulfate)
- d. Chlorinated hydrocarbon compounds from still residues.
- e. Amiben and other amino type agricultural herbicides

GAF states that present manufacturing operations at the site generate phenol wastes, spent caustic, tetrahydrofuran bottoms and waste water from cleaning process equipment.

These substances were disposed of both offsite and onsite. With regard to the onsite disposal, this was accomplished through burial in landfills or through discharge into the ditch system as part of the Site's waste water stream described in paragraphs 9, 10 and 11 below. These substances are pollutants as defined under the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., and the regulations promulgated pursuant thereto, N.J.A.C. 7:14A-1 et seq. These substances are hazardous wastes and/or hazardous constituents as defined under the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq. and the regulations promulgated pursuant thereto, N.J.A.C. 7:26-1.1 et seq. These substances are hazardous substances as defined under the Spill Compensation and Control Act, 58:10-23.11 et seq. and the regulations promulgated pursuant thereto, N.J.A.C. 7:1E-1.1 et seq.

6. GAF has advised that a 10 to 12 acre landfill, sometimes referred to as the "Old Landfill", is located in the southwest portion of the facility. This landfill was operated from the early 1930s until 1970 by the various owners responsible for the facility during this time period as specified in paragraph 3. In 1981, GAF submitted a Comprehensive Environmental Response, Compensation and Liability Act (hereinafter "CERCLA") Section 103(c) Notification of Hazardous Waste Site document, and on May 22, 1985, GAF submitted a RCRA and HSWA Solid Waste Management Unit Information document, which described the materials disposed in the Old Landfill. GAF advised that GAF and the various other owners deposited dry and liquid chemical wastes (organics, inorganics, solvents, heavy metals, acids), drummed materials, bulk liquids, phenolic oils, laboratory wastes, off specification products, still residues, solid wastes and industrial trash in this landfill. GAF alleges that the "Old Landfill" was operated in accordance with applicable law at the time of its operation.

7. In 1975, GAF discovered a floating organic layer on the ground water beneath the "Old Landfill". GAF installed four concrete standpipes in the "Old Landfill", also in 1975, to recover the organic layer. In 1982, GAF sampled the liquid contents in the standpipes and the analysis of these samples indicated that the liquid layer contained phenols, mercury and chlorinated hydrocarbons.

8. A drum landfill, which is located north of the "Old Landfill", was operated from July 1970 to June 1973. GAF obtained an NJDEP, Solid Waste Administration Registration, Number 20322001, dated July 24, 1970, to operate a landfill at the site. The GAF submittals described in paragraph 6 above indicate that the types of wastes disposed in this landfill included, but were not limited to, those waste types deposited in the "Old Landfill". GAF alleges that the material disposed in the drum landfill was primarily Amiben process waste and Amiben still bottoms.

9. The unlined ditch system, the network of unlined topographic depressions and channels referred to in paragraph 2 above, has served, and continues to serve, to collect and transmit waste water for disposal from the various buildings and chemical process areas throughout the Site. The waste waters include chemical process water, cooling water, and sanitary waste waters. The chemical process waste waters have contained in the past the substances listed in paragraph 5. Waste waters exit some buildings via drain pipes and floor drains directly to crawl spaces beneath the buildings which feed to the unlined ditch system. Some of the buildings have special chemical drains which lead directly to the ditch system, rather than to crawl spaces.

10. The ditch system also captures surface runoff, runoff from surface spills, and leachate seeping from the landfills described in paragraphs 6 and 8 above. Although it was not designed or constructed to contain ground water, GAF alleges that GAF's ground water investigations to date indicate ground water from a large central area of the facility, contained within the uppermost water bearing zone, is captured by the ditch system from which it is conveyed to the WWTF. GAF further alleges that ground water flowing from these areas never reaches the site boundary and does not flow off of the site.

11. Prior to 1977, untreated waste water was conveyed by the unlined ditch system to discharge points into Piles Creek and the Arthur Kill. Immediately prior to the discharge of the waste water into the Arthur Kill, lime was added to the waste water for pH adjustment and the surface of the waste water was skimmed to remove floating oil. During the conveyance of the waste water from the various sources onsite to the treatment and discharge points, the untreated waste water tended to accumulate in low lying areas in and around the ditch system. Since the low lying areas and the ditch system were unlined, infiltration of the waste water occurred. In 1977, GAF constructed the WWTF and, after that date, the ditch system was utilized to convey the waste water to the WWTF for disposal.

12. Due to the fact that the ditch system is unlined, some of the waste water and its contents infiltrate directly into the ground. Accordingly, waste waters containing pollutants, hazardous constituents, and/or hazardous substances, such as those listed in paragraph 5, from manufacturing processes at GAF were discharged into the waters and onto the lands of the State of New Jersey via the unlined ditch system described in paragraphs 9, 10, and 11.

13. GAF manufactured alpha-sulfonated anthraquinones in a building known as Building 49 until 1970. Liquid wastes and waste waters from these manufacturing operations were discharged from Building 49 into chemical

sewers which conveyed them to the ditch system. The building was constructed on pilings over fill that may have consisted of coal ash. During the conveyance of waste water from Building 49 to the treatment and discharge points, the untreated waste water tended to accumulate in low lying areas in and around the ditch system. Since the low lying areas and the ditch system were unlined, infiltration of the waste water occurred. GAF ceased manufacturing operations in Building 49 in 1970 and demolished this building in 1973. The liquid wastes and waste water discharged from Building 49 contained dilute sulfuric acid residues, mercuric sulfate and entrained metallic mercury.

14. Since 1977, GAF has operated the WWTF. The WWTF receives chemical process waste water, contact and noncontact cooling water, cooling tower and boiler blowdowns, equipment washes, sanitary waste water, air pollution control equipment wastewater and storm runoff from the GAF facility. WWTF operations include: coarse screening, oil skimming, equalization, preaeration and neutralization, aeration, clarification, and chlorination, when necessary. The effluent is discharged to the Arthur Kill.

15. GAF filed, pursuant to RCRA, a Part A permit application with the EPA in November 1980 for hazardous waste storage in containers (56,200 gallons capacity) and in an above ground tank (6,000 gallons capacity).

16. On April 5, 1984, the NJDEP, Division of Hazardous Waste Management (hereinafter "DHWM") requested submittal of the RCRA Part B permit application for the storage activities. Subsequent to this submittal, GAF decided to seek reclassification to "generator only" status by reason of its intention to cease storage of containerized hazardous wastes in excess of 90 days, and the exemption of the above ground storage tank from regulation under the hazardous waste program pursuant to N.J.A.C. 7:26-8.2(b).

17. Consistent with its intention to cease on-site storage of hazardous wastes in excess of 90 days, GAF submitted a closure plan for the container storage area in Building Number 53 on December 6, 1985 and submitted a revised partial closure plan on May 5, 1986, which the DHWM approved on July 1, 1986. The closure plan required the removal of all containerized wastes, decontamination of the floor and walls of the first floor, wipe samples of the interior of the first floor after decontamination, and soil sampling beneath and around the building. GAF implemented the partial closure plan. Wipe samples were taken and they indicated that the interior of Building 53 had been decontaminated.

18. Also, on November 17 and 19, 1986, GAF conducted soil sampling around Building Number 53 in accordance with the closure plan described in paragraph 17 above. The sample analysis results indicated contamination of the soil was present. The soil was contaminated with the following hazardous wastes, hazardous constituents, hazardous substances, and /or pollutants: volatile organics, base neutral extractables, cyanide, arsenic and various heavy metals. GAF collected six additional soil samples from beneath Building Number 53 on April 15, 1987, and on April 26, 1988, five other soil samples were collected from an adjacent area where Building Number 52 was formerly located. The analysis of these samples indicated that the soil beneath and adjacent to Building 53 and the soil beneath

Building 52 were contaminated with the following hazardous wastes, hazardous constituents, hazardous substances, and/or pollutants: toluene, total xylenes, various chlorobenzenes, various phthalates, naphthalene, nitrobenzene, and various heavy metals.

19. At a March 18, 1988 meeting between GAF and NJDEP-DHWM, representatives from GAF indicated that the soil contamination under Building Number 53 would be investigated and remediated along with other areas of soil contamination at the Site pursuant to one or more actions being negotiated with the NJDEP, Division of Water Resources. In view of the foregoing, certification of closure of the interior of Building Number 53 (the decontamination and wipe sampling phases of the interior) was submitted in accordance with the NJDEP approved closure plan on April 8, 1988.

20. In order to investigate ground water contamination at the Site, GAF installed seven monitoring wells at the Site between January 11 and January 13, 1983. GAF collected ground water samples from all seven wells on January 25, 1983. The samples were analyzed for 104 priority pollutants. The following materials were detected in the concentrations listed: benzene - 584 parts per billion (hereinafter "ppb"), chlorobenzene - 15,200 ppb, toluene - 96 ppb, phenol - 5,800 ppb, 1,2-dichlorobenzene - 907 ppb, 1,3-dichlorobenzene - 490 ppb, 1,4-dichlorobenzene - 497 ppb, naphthalene - 203 ppb, antimony - 330 ppb, arsenic - 360 ppb, cyanide - 585 ppb, and total phenolics - 13,600 ppb.

21. The following substances have been found in soil and ground water samples taken at this site as described in paragraphs 7, 18 and 20.

- Arsenic
- Benzene
- Chlorobenzene
- Chromium
- Cyanide
- 1,2 Dichlorobenzene
- 1,4 Dichlorobenzene
- Lead
- Mercury
- Naphthalene
- Nitrobenzene
- Phenol
- Polychlorinated Biphenyl (Arochlor 1260)
- Toluene

These substances are pollutants as defined under the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., and the regulations promulgated pursuant thereto, N.J.A.C. 7:14A-1 et seq. These substances are hazardous wastes and/or hazardous constituents as defined under the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq. and the regulations promulgated pursuant thereto, N.J.A.C. 7:26-1.1 et seq. These substances are hazardous substances as defined under the Spill Compensation and Control Act, 58:10-23.11 et seq. and the regulations promulgated pursuant thereto, N.J.A.C. 7:1E-1.1 et seq.

22. The GAF facility is regulated pursuant to the New Jersey Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., specifically the Hazardous Waste Regulations, N.J.A.C. 7:26-1 et seq. The GAF facility is also regulated pursuant to RCRA and HSWA and is subject to the corrective action requirements contained in Sections 3004(u), 3004(v) and 3008(h) of HSWA. The State of New Jersey currently has similar corrective action authorities and therefore acts as EPA's contractor (through the FY89 RCRA Subtitle C Grant Agreement) to oversee corrective action activities at the GAF facility. In this capacity, all documents submitted pursuant to this ACO may be reviewed by EPA for comments with regard to compliance with HSWA requirements. Such comments will be transmitted to GAF by NJDEP as the lead agency for these activities. It is the intent of the involved parties to satisfy the RCRA/HSWA requirements.

23. Based on these FINDINGS, the Department alleges that GAF has violated the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., specifically N.J.S.A. 58:10A-6, and the regulations promulgated pursuant thereto, N.J.A.C. 7:14A-1 et seq., the Spill Compensation and Control Act, 58:10-23.11 et seq. and regulations promulgated pursuant thereto, N.J.A.C. 7:1E-1.1 et seq., and the Solid Waste Management Act N.J.S.A. 13:1E-1 et seq. and regulations promulgated pursuant thereto, N.J.A.C. 7:26-1.1 et seq. GAF alleges that it has not violated the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., specifically N.J.S.A. 58:10A-6, and the regulations promulgated pursuant thereto, N.J.A.C. 7:14A-1 et seq., the Spill Compensation and Control Act, 58:10-23.11 et seq. and regulations promulgated pursuant thereto, N.J.A.C. 7:1E-1.1 et seq., and the Solid Waste Management Act N.J.S.A. 13:1E-1 et seq. and regulations promulgated pursuant thereto, N.J.A.C. 7:26-1.1 et seq. In order to resolve this matter, the Department and GAF agree to enter into this ACO for the purpose of investigating and remediating all contamination at or emanating from the site.

24. Pursuant to the requirements of HSWA, the list of Solid Waste Management Units identified as continuing release sources at GAF include, but are not limited to: the "Old Landfill", the Drum Landfill, the Unlined Ditch System, and the Building 53 area.

25. To determine the nature and extent of the problem presented by the discharge of pollutants, hazardous wastes, hazardous constituents and hazardous substances both on and off of the site and to develop environmentally sound remedial actions, it is necessary to conduct a remedial investigation and feasibility study of remedial action alternatives (hereinafter "RI/FS"). To correct the problems presented by the discharge, it is necessary to implement a remedial action plan.

26. To resolve this matter without the necessity for litigation, GAF has agreed to conduct an RI/FS and to design and implement a remedial action alternative to remedy any and all pollution at the site, emanating from the site, or which has emanated from the site.

ORDER

NOW THEREFORE IT IS HEREBY ORDERED AND AGREED THAT:

✓ A. Reimbursement of Prior Costs and Damages

27. Within thirty (30) calendar days after the effective date of this Administrative Consent Order, GAF shall submit the amount of \$31,018 to the Department as payment for all costs incurred by the Department to date, in connection with the investigation of, and response to, the matters described in the FINDINGS hereinabove, including the costs associated with the preparation of this Administrative Consent Order. Payment of the above amount shall be made by a cashier's or certified check payable to the "Treasurer, State of New Jersey" or "Administrator, New Jersey Spill Compensation Fund", as appropriate. Payment shall be submitted to the contact listed in paragraph 50. [Section IV., third paragraph]

II. Remedial Investigation and Cleanup

A. Remedial Investigation

✓ 28. Within ninety (90) calendar days after the effective date of this Administrative Consent Order, GAF shall submit to the Department a detailed draft Remedial Investigation Work Plan (hereinafter the "RI Work Plan") in accordance with the scope of work set forth in Appendices A, B and C, which are attached hereto and made a part hereof.

✓ 29. Within thirty (30) calendar days after receipt of the Department's written comments on the draft RI Work Plan, GAF shall modify the draft RI Work Plan to conform to the Department's comments and shall submit the modified RI Work Plan to the Department. The determination as to whether or not the modified RI Work Plan, as resubmitted, conforms to the Department's comments and is otherwise acceptable to the Department shall be made solely by the Department in writing.

✓ 30. Upon receipt of the Department's written final approval of the RI Work Plan, GAF shall conduct the remedial investigation in accordance with the approved RI Work Plan and the schedule therein.

✓ 31. GAF shall submit to the Department a draft Remedial Investigation Report (hereinafter "RI Report") in accordance with Appendix A and the RI Work Plan and the schedule therein. GAF and the Department agree that it is their intention to carry out the remedial investigation in the most expeditious fashion possible and the schedule for the performance of the work shall be in conformity with that agreement. Further, GAF and the Department agree that, depending upon the level of site investigation necessitated by the conditions at the Site, the performance of such a remedial investigation and the preparation of a RI Report may be accomplished within 9 to 15 months of the execution of this Administrative Consent Order.

✓ 32. If upon review of the draft RI Report the Department determines that additional remedial investigation is required, GAF shall conduct additional remedial investigation as directed by the Department and submit a second draft RI Report.

✓ 33. Within thirty (30) calendar days after receipt of the Department's written comments on the draft or second draft (only if

applicable pursuant to the preceding paragraph) RI Report, GAF shall modify the draft or second draft RI Report to conform to the Department's comments and shall submit the modified RI Report to the Department. The determination as to whether or not the modified RI Report, as resubmitted, conforms with the Department's comments and is otherwise acceptable by the Department shall be made solely by the Department in writing.

B. Feasibility Study

34. Within thirty (30) calendar days after receipt of the Department's written final approval of the RI Report, or as otherwise directed by the Department, GAF shall submit to the Department a detailed draft Feasibility Study Work Plan (hereinafter, "FS Work Plan") in accordance with the scope of work set forth in Appendix D, which is attached hereto and made a part hereof.

35. Within thirty (30) calendar days after receipt of the Department's written comments on the draft FS Work Plan, GAF shall modify the draft FS Work Plan to conform to the Department's comments and shall submit the modified FS Work Plan to the Department. The determination as to whether or not the modified FS Work Plan, as resubmitted, conforms to the Department's comments and is otherwise acceptable to the Department shall be made solely by the Department in writing.

36. Upon receipt of the Department's written final approval of the FS Work Plan, GAF shall conduct the feasibility study in accordance with the approved FS Work Plan and the schedule therein.

37. GAF shall submit to the Department a draft Feasibility Study Report (hereinafter "FS Report") in accordance with Appendix D and the approved FS Work Plan and the schedule therein. GAF and the Department agree that the preparation of a draft Feasibility Study Report shall be accomplished within 6 months of the completion of the RI Report.

38. Within thirty (30) calendar days after receipt of the Department's written comments on the draft FS Report, GAF shall modify the draft FS Report to conform to the Department's comments and shall submit the modified FS Report to the Department. The determination as to whether or not the modified FS Report, as resubmitted, conforms to the Department's comments and is otherwise acceptable to the Department shall be made solely by the Department in writing.

C. Remedial Action

39. In the event that the Department determines that remedial action is necessary, the Department will make the selection of the remedial action alternative based on the criteria set forth in Appendix D, Section I.D.

✓ 40. Within ninety (90) calendar days after receipt of the Department's written notification of selection of a remedial action alternative, GAF shall submit to the Department a detailed draft Remedial Action Plan in accordance with the scope of work set forth in Appendix E, which is attached hereto and made a part hereof. The ninety (90) day period shall be extended by the Department should the nature of the selected

remedial action alternative, in the judgment of the Department, necessitate a longer period in order to complete the remedial design work. GAF and the Department agree that it is their intention to carry out the remedial action in the most expeditious fashion possible. The detailed draft schedule which is to be prepared by GAF for the performance of the remedial action plan shall reflect this agreement.

41. Within thirty (30) calendar days after receipt of the Department's written comments on the draft Remedial Action Plan, GAF shall modify the draft Remedial Action Plan to conform to the Department's comments and shall submit the modified Remedial Action Plan to the Department. The determination as to whether or not the modified Remedial Action Plan, as resubmitted, conforms to the Department's comments and is otherwise acceptable to the Department shall be made solely by the Department in writing. ✓

42. Upon receipt of the Department's written final approval of the Remedial Action Plan, GAF shall implement the approved Remedial Action Plan in accordance with the schedule therein.

D. Additional Remedial Investigation and Remedial Action

43. If at any time prior to GAF's receipt of written notice from the Department pursuant to paragraph 88 [i.e., the third to last paragraph in the ACO] the Department determines that the criteria set forth in Appendix D (Section I.D.) are not being achieved or that additional remedial investigation and/or remedial action is required to protect human health or the environment, GAF shall conduct such additional activities as directed by the Department.

E. Progress Reports

44. GAF shall submit to the Department quarterly progress reports; the first progress report shall be submitted on or before the 30th calendar day of the month following the first full quarter after the effective date of this Administrative Consent Order. Each progress report thereafter shall be submitted on or before the 30th calendar day of the month following the quarter being reported. Each progress report shall detail the status of GAF's compliance with this Administrative Consent Order and shall include the following:

- a. Identification of site and reference to this Administrative Consent Order;
- b. Identify specific requirements of this Administrative Consent Order (including the corresponding paragraph number or schedule) which were initiated during the reporting period;
- c. Identify specific requirements of this Administrative Consent Order (including the corresponding paragraph number or schedule) which were initiated in a previous reporting period, which are still in progress and which will continue to be carried out during the next reporting period;

- d. Identify specific requirements of this Administrative Consent Order (including the corresponding paragraph number or schedule) which were completed during this reporting period;
- e. Identify specific requirements of this Administrative Consent Order (including the corresponding paragraph numbers or schedule) which should have been completed during the reporting period and were not;
- f. An explanation of any non-compliance with any approved work plan(s), schedule(s) or Remedial Action Plan, and actions taken or to be taken to rectify non-compliance;
- g. Identify the specific requirements of this Administrative Consent Order (including the corresponding paragraph number or schedule) that will be initiated during the upcoming reporting period.

III. Permits

45. GAF shall submit complete applications for and shall timely obtain all necessary Federal, State and local permits for activities which GAF must perform in order to carry out the obligations of this Administrative Consent Order in accordance with the approved time schedules. This Administrative Consent Order shall not be construed to be a permit or in lieu of a permit for existing or former activities which require permits and it shall not relieve GAF from obtaining and complying with all applicable Federal, State and local permits necessary for any future activities which GAF must perform in order to carry out the obligations of this Administrative Consent Order.

46. With regard to permits required to carry out this Administrative Consent Order, within thirty (30) calendar days of receipt of written comments concerning any permit application to a Federal, State or local agency, or sooner if required by the permitting agency, GAF shall modify the permit application to conform to the agency's comments and resubmit the permit application to the agency. The determination as to whether or not the permit application, as resubmitted, conforms with the agency's comments or is otherwise acceptable to the agency shall be made solely by the agency in writing.

47. This Administrative Consent Order shall not preclude the Department from requiring that GAF apply for any permit or permit modification issued by the Department under the authority of the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., and/or any other statutory authority for the matters covered herein. The terms and conditions of any such permit or permit modification shall not be preempted by the terms and conditions of this Administrative Consent Order even if the terms and conditions of any such permit or permit modification are more stringent than the terms and conditions of this Administrative Consent Order. GAF reserves the right to contest any and all conditions of a permit or permit modification pursuant to the substantive rights and procedures established in the statutes and regulations which authorize such permits; provided, however, that GAF waives its right to contest the conditions of any such

permit or permit modification to the extent such conditions are substantially consistent with the provisions of this Administrative Consent Order; and provided further that the assertion of any such right shall neither relieve nor delay GAF's obligation to timely comply with the provisions and approved time schedules of this Administrative Consent Order.

IV. Project Coordination

48. GAF shall submit to the Department all documents required by this Administrative Consent Order, including correspondence relating to force majeure issues, by certified mail, return receipt requested or by hand delivery with an acknowledgement of receipt form for the Department's signature. The date that the Department executes the receipt or acknowledgement will be the date the Department uses to determine GAF's compliance with the requirements of this Administrative Consent Order and the applicability of stipulated penalties and any other remedies available to the Department.

49. Within seven (7) calendar days after the effective date of this Administrative Consent Order, GAF shall submit to the Department the name, title, address and telephone number of the individual who shall be the GAF's contact for the Department for all matters concerning this Administrative Consent Order. The individual identified in the following paragraph shall be the Department's contact for the GAF for all matters concerning this Administrative Consent Order.

50. GAF shall submit five (5) copies of all documents required by this Administrative Order, unless otherwise directed by the Department, to:

Melinda Dower, Chief
Bureau of Federal Case Management
NJ Department of Environmental Protection
Division of Hazardous Waste Management
401 East State Street, CN028
Trenton, NJ 08625

51. GAF shall verbally notify the contact person listed above at least 14 days prior to the initiation of any field activities, and GAF shall insure that written confirmation of that notification is received by the Department at least 7 days prior to the initiation of such activities.

V. Financial Requirements

52. GAF shall obtain and deliver to the Department financial assurances in the form of irrevocable letters of credit in the amounts and in the manner set forth herein. GAF shall also establish an irrevocable standby trust fund in the manner set forth herein. GAF hereby agrees that any failure to comply or to timely comply with any of the obligations set forth in this Paragraph 52 shall subject it to the special stipulated penalties herein.

A. IRREVOCABLE LETTERS OF CREDIT

1. Time for and Amount of Letters of Credit: Irrevocable letters of credit totalling SEVEN MILLION FIVE HUNDRED THOUSAND DOLLARS (\$7,500,000.00) shall be established at the times and in the amounts set forth below:

✓ a. Within thirty (30) calendar days after the effective date of this Administrative Consent Order, GAF shall submit to the Department an irrevocable letter of credit in the amount of TWO MILLION DOLLARS (\$2,000,000.00).

b. Within one hundred twenty (120) calendar days after the effective date of this Administrative Consent Order, GAF shall submit to the Department another irrevocable letter of credit in the amount of TWO MILLION FIVE HUNDRED THOUSAND DOLLARS (\$2,500,000.00).

c. On or before March 31, 1990, GAF shall submit to the Department another irrevocable letter of credit in the amount of THREE MILLION DOLLARS (\$3,000,000.00).

2. Form of Letters of Credit: Each of the foregoing irrevocable letters of credit shall meet the following requirements:

a. Each shall be identical to the wording specified in Appendix F, which is attached hereto and made a part hereof;

b. Each shall be issued by a New Jersey State or Federally chartered bank, savings bank, or savings and loan association, which has its principal office in New Jersey, unless otherwise approved by the Department; and

c. Each shall be accompanied by a letter from GAF referring to the Letter of Credit by number, issuing institution and date and providing the following information: the name and address of the facility and/or site which is the subject of the Administrative Consent Order and the amount of funds securing GAF's performance of all its obligations under the Administrative Consent Order.

✓ B. IRREVOCABLE STANDBY TRUST AGREEMENT

✓ 1. Time for and Amount of Irrevocable Standby Trust: GAF shall establish an irrevocable standby trust fund within thirty (30) calendar days after the effective date of this Administrative Consent Order, with an initial deposit of ONE THOUSAND DOLLARS (\$1,000.00).

2. Form of Irrevocable Standby Trust: The irrevocable trust fund agreement shall meet the following requirements:

a. Is identical to the wording specified in Appendix G which is attached hereto and made a part hereof;

b. The irrevocable standby trust fund shall be the depository for all funds paid pursuant to a draft by the Department against the letter of credit, provided that the Department may, at its sole option, elect to have funds associated with special stipulated penalties paid directly to the Department;

c. The trustee shall be an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or New Jersey agency;

d. Is accompanied by an executed certification of acknowledgment that is identical to the wording specified in Appendix H.

C. SPECIAL STIPULATED PENALTIES & ACCELERATOR CLAUSE

1. Amount of Special Stipulated Penalties: As an exception to Paragraph 59, GAF agrees that it shall pay the special stipulated penalties set forth herein for any failure to comply or to timely comply with any of its obligations as set forth anywhere in this Paragraph 52. Each obligation which is not complied with or which is not timely complied with shall be considered a separate violation and each such violation shall be subject to daily, special stipulated penalties in accordance with the following rate schedule:

<u>Calendar Days After Due Date</u>	<u>Special Stipulated Penalties</u>
1-30	\$25,000 per calendar day
31-over	\$50,000 per calendar day

Special stipulated penalties shall continue to accrue with respect to each violation until such time as GAF shall cure each such failure by GAF to comply with any of its obligations as set forth in this Paragraph 52.

2. Accelerator Clause: Upon the passage of the thirtieth (30th) cumulative day of any failure to comply or to timely comply, whether such cumulative period arises out of one or several violations and whether such cumulative period is continuous or not, all of GAF's obligations pursuant to this Paragraph 52 shall become immediately due including, but not limited to, GAF's obligation to submit to the Department an irrevocable letter of credit in the amount of SEVEN MILLION FIVE HUNDRED THOUSAND DOLLARS (\$7,500,000.00). Any failure to timely comply with this accelerator clause shall also be subject to special stipulated penalties.

3. Time and Terms of Payment: The Department may at any time require the payment of such special stipulated penalties as may have accrued to that date, without regard as to whether GAF may have cured its failure to comply with its obligation(s) by that date. Further, special stipulated penalties shall continue to accrue until such time as the violation is cured.

At the sole discretion of the Department, the Department may either directly withdraw any special stipulated penalties which are due from the letter of credit, or may notify GAF to tender payment of such penalties in the form of a certified check payable to the "Treasurer, State of New Jersey" within twenty-one (21) calendar days. In the latter event, special stipulated penalties shall apply to any failure to tender the certified check within the twenty-one (21) day period.

4. Duty to Supplement Letter of Credit: Should the amount of any of the several letters of credit at any time fall below the applicable

amount specified in Subparagraph A. herein, whether by reason for the Department's withdrawal of special stipulated penalties or otherwise, then GAF shall within ten (10) calendar days of such an eventuality submit to the Department another irrevocable letter of credit which satisfies the applicable amount specified in Subparagraph A and all other requirements of this Paragraph 52 and the Administrative Consent Order.

5. Special Terms: Notwithstanding any other provision in this Administrative Consent Order which may be to the contrary, GAF shall have no right to any notice or any opportunity to cure any failure to timely comply with any obligation other than that which is specifically provided to GAF in this Paragraph 52. Further, it is specifically agreed and understood that GAF's obligations herein are purely financial in nature and that any delay shall not be excusable by reason of the occurrence of any cause which is or may be beyond the control of GAF, except that any delay caused as a result of action or inaction by the Department shall be subject to the normal Force Majeure provisions of this Administrative Consent Order.

6. The provisions of this Subparagraph C shall no longer apply once GAF has posted letters of credit totalling SEVEN MILLION FIVE HUNDRED THOUSAND DOLLARS (\$7,500,000.00) and has paid any special stipulated penalties which have arisen pursuant to this Subparagraph C.

53. GAF shall establish and maintain the standby trust fund until terminated by the written agreement of the Department, the trustee and GAF, or of the trustee and the Department if GAF ceases to exist. GAF shall maintain the letter of credit or performance bond until the Department provides written notification to GAF that the financial assurance is no longer required for compliance with this Administrative Consent Order. In the event that the Department determines that GAF has failed to perform any of its obligations under this Administrative Consent Order, the Department may proceed to have the financial assurance deposited into the standby trust; provided, however, that before the Department draws on the letter of credit or makes a claim against the performance bond, the Department shall notify GAF in writing of the obligation(s) which it has not performed, and GAF shall have a reasonable time, not to exceed thirty (30) calendar days, unless extended in writing by the Department, to perform such obligation(s). In the event the Department draws down on GAF's letter of credit, GAF reserves whatever rights it may have, if any, to challenge the Department's action; provided that GAF agrees that it shall not seek to interfere with nor delay the performance of any work with regard to the Site whether by the Department or by others.

54. At any time, GAF may apply to the Department to substitute other financial assurances in a form, manner and amount acceptable to the Department.

B. Project Cost Review

55. Beginning three hundred sixty-five (365) calendar days after the effective date of this Administrative Consent Order and annually thereafter on that same calendar day, GAF shall submit to the Department a detailed review of all costs required for GAF's compliance with this Administrative Consent Order. This cost review shall include a detailed

summary of all monies spent to date pursuant to this Administrative Consent Order, the estimated cost of all future expenditures required to comply with this Administrative Consent Order (including any operation and maintenance costs), and the reason for any changes from the previous cost review submitted by GAF.

56. At any time after GAF submits the first cost review pursuant to the preceding paragraph, GAF may request the Department's approval to reduce the amount of the financial assurance to reflect the remaining costs of performing its obligations under this Administrative Consent Order. If the Department grants written approval of the request, GAF may amend the amount of the then existing letter of credit or performance bond.

57. If the estimated cost of meeting GAF's obligations in this Administrative Consent Order at any time increases to an amount greater than the financial assurance, GAF shall, within fourteen (14) calendar days after receipt of written notice of the Department's determination, increase the amount of the then existing letter of credit or performance bond so that it is equal to the estimated cost as determined by the Department. GAF shall provide the amended financial assurance to the Department within seven calendar days (7) after it has been obtained.

C. Oversight Cost Reimbursement

58. Within thirty (30) calendar days after receipt from the Department of an itemized accounting of all costs incurred in connection with its oversight functions of this Administrative Consent Order for a fiscal year, or any part thereof, GAF shall submit to the Department a cashier's or certified check payable to the "Treasurer, State of New Jersey" for the full amount of the Department's oversight costs.

D. Stipulated Penalties

59. Upon a demand made by the Department, GAF shall pay stipulated penalties to the Department for its failure to comply with any of the deadlines or schedules required by this Administrative Consent Order including those established and approved by the Department in writing pursuant to this Administrative Consent Order. Each deadline or schedule not complied with shall be considered a separate violation. Payment of stipulated penalties shall be made according to the following schedule, unless the Department has modified the compliance date pursuant to the force majeure provisions hereinbelow:

<u>Calendar Days After Due Date</u>	<u>Stipulated Penalties</u>
1 - 7	\$ 500 per calendar day
8 - 14	\$ 2,000 per calendar day
15 - 21	\$ 3,000 per calendar day
22 - 28	\$ 5,000 per calendar day
29 - over	\$10,000 per calendar day

60. Any such penalty shall be due and payable twenty-one (21) calendar days following receipt of a written demand by the Department. Payment of

stipulated penalties shall be made by a cashier's or certified check payable to the "Treasurer, State of New Jersey".

VI. Force Majeure

61. If any event as specified in the following paragraph occurs which GAF believes will or may cause delay in the compliance with any provision of this Administrative Consent Order, GAF shall notify the Department in writing within seven (7) calendar days of the delay or anticipated delay, as appropriate, referencing this paragraph and describing the anticipated length of the delay, the precise cause or causes of the delay, any measures taken or to be taken to minimize the delay, and the time required to take any such measures to minimize the delay. GAF shall take all necessary action to prevent or minimize any such delay.

62. If the Department finds that: (a) GAF has complied with the notice requirements of the preceding paragraph, (b) GAF has taken all necessary action to prevent or minimize the delay, and; (c) that any delay or anticipated delay has been or will be caused by fire, flood, riot, strike or other circumstances beyond the control of GAF, the Department shall extend the time for performance hereunder for a period no longer than the delay resulting from such circumstances. If the Department determines that either GAF has not complied with the notice requirements of the preceding paragraph, or the event causing the delay is not beyond the control of GAF, failure to comply with the provisions of this Administrative Consent Order shall constitute a breach of the requirements of this Administrative Consent Order. The burden of proving that any delay is caused by circumstances beyond the control of GAF and the length of any such delay attributable to those circumstances shall rest with GAF. Increases in the cost or expenses incurred by GAF in fulfilling the requirements of this Administrative Consent Order shall not be a basis for an extension of time. Delay in an interim requirement shall not automatically justify or excuse delay in the attainment of subsequent requirements. Force Majeure shall not include nonattainment of the goals, standards, guidelines and requirements set forth in the appendices attached hereto.

VII. Reservation of Rights

63. If GAF fails to pay stipulated penalties pursuant to paragraph 60, the Department may institute civil proceedings to collect such penalties, or assess civil administrative penalties for the violations of this Administrative Consent Order; the Department may also bring an action in New Jersey Superior Court pursuant to N.J.S.A. 58:10A-10 to enforce the provisions of this Administrative Consent Order.

64. GAF's payment of stipulated penalties pursuant to this Administrative Consent Order shall not preclude the Department from electing to pursue any injunctive relief to enforce the terms of this Administrative Consent Order.

65. The Department reserves the right to unilaterally terminate this Administrative Consent Order in the event that the Department gives GAF notice that GAF has violated a term of this Administrative Consent Order and GAF does not promptly remedy such violation.

66. Nothing in this Administrative Consent Order shall preclude the Department from seeking civil or civil administrative penalties against GAF.

67. This Administrative Consent Order shall not be construed to affect or waive the claims of federal or State natural resource trustees against any party for damages for injury to, destruction of, or loss of natural resources. Further, this Administrative Consent Order shall not be construed to affect or waive any claims, rights or causes of action which the State of New Jersey or the Department may have or acquire against GAF by reason of the assertion of a claim against the State of New Jersey or the Department by a third party.

68. The Department reserves the right to require GAF to take or arrange for the taking of, any and all additional measures should the Department determine that such actions are necessary to protect human health or the environment. Nothing in this Administrative Consent Order shall constitute a waiver of any statutory right of the Department to require GAF to undertake such additional measures should the Department determine that such measures are necessary. GAF's refusal to undertake such additional measures as may be beyond the scope of this Administrative Consent Order shall not be a violation of this Administrative Consent Order.

VIII. General Provisions

69. This Administrative Consent Order shall be binding on GAF, its principals, directors, officers, agents, successors, assignees and any trustee in bankruptcy or receiver appointed pursuant to a proceeding in law or equity.

70. GAF shall perform all work conducted pursuant to this Administrative Consent Order in accordance with prevailing professional standards.

71. In accordance with N.J.S.A. 45:8-45, all plans or specifications involving professional engineering, submitted pursuant to this Administrative Consent Order, shall be submitted affixed with the seal of a professional engineer and any plan involving land surveying submitted pursuant to this Administrative Consent Order shall be submitted affixed with the seal of a land surveyor licensed pursuant to the provisions of N.J.S.A. 45:8-1 et seq.

72. GAF shall conform all actions pursuant to this Administrative Consent Order with all applicable Federal, State, and local laws and regulations. GAF shall be responsible for obtaining all necessary permits, licenses and other authorizations required to comply with this Administrative Consent Order.

73. All appendices referenced in this Administrative Consent Order, as well as all reports, work plans and documents required under the terms of this Administrative Consent Order are, upon approval by the Department, incorporated into this Administrative Consent Order by reference and made a part hereof.

74. Each field activity to be conducted pursuant to this Administrative Consent Order shall be coordinated by an onsite professional(s) with experience relative to the particular activity being conducted at the site each day, such as experience in the area of hydrogeology, geology, environmental controls, risk analysis, health and safety or soils.

75. Upon the receipt of a written request from the Department, GAF shall submit to the Department all data and information concerning pollution at and/or emanating from the site, or which has emanated from the site, including raw sampling and monitor data, whether or not such data and information was developed pursuant to this Administrative Consent Order.

76. GAF shall make available to the Department all technical records and contractual documents maintained or created by GAF or its agents in connection with this Administrative Consent Order.

77. GAF shall preserve, during the pendency of this Administrative Consent Order and for a minimum of six (6) years after its termination, all data, records and documents in their possession or in the possession of their divisions, employees, agents, accountants, contractors, or attorneys which relate in any way to the implementation of work under this Administrative Consent Order, despite any document retention policy to the contrary. After this six year period, GAF shall notify the Department within thirty (30) calendar days prior to the destruction of any such documents. If the Department requests in writing that some or all of the documents be preserved for a longer time period, GAF shall comply with that request. Upon receipt of a written request by the Department, the GAF shall submit to the Department all non-privileged records or copies of any such records.

78. No obligations imposed by this Administrative Consent Order (with the exception of paragraph(s) 58 and 59 [i.e., first stipulated penalty number and administrative oversight paragraph] are intended to constitute a debt, claim, penalty or other civil action which should be limited or discharged in a bankruptcy proceeding. All obligations imposed by this Administrative Consent Order shall constitute continuing regulatory obligations imposed pursuant to the police powers of the State of New Jersey intended to protect human health or the environment.

79. In addition to the Department's statutory and regulatory rights to enter and inspect, GAF shall allow the Department and its authorized representatives access to the site at all times for the purpose of monitoring GAF's compliance with this Administrative Consent Order and/or to perform any remedial activities GAF fails to perform as required by this Administrative Consent Order. GAF shall have the right to monitor the activities of the Department and its representatives and GAF agrees that it shall not interfere with such activities. The Department agrees that it shall observe the same personal safety equipment requirements as are applicable to GAF's employees, and GAF agrees to make available to the Department such equipment.

80. GAF shall not construe any informal advice, guidance, suggestions, or comments by the Department, or by persons acting on behalf

of the Department, as relieving GAF of its obligation to obtain written approvals as required herein, unless the Department specifically relieves GAF of such obligations, in writing in accordance with the following paragraph.

81. No modification or waiver of this Administrative Consent Order shall be valid except by written amendment to this Administrative Consent Order duly executed by GAF and the Department.

82. GAF hereby consents to and agrees to comply with this Administrative Consent Order which shall be fully enforceable as an Order in the New Jersey Superior Court upon the filing of a summary action for compliance pursuant to N.J.S.A. 13:1D-1 et seq., the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq. and/or the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq.

83. In the event that the Department determines that a public meeting concerning the cleanup of the site is necessary at any time, GAF shall ensure that the GAF's appropriate representative is prepared, available, and participates in such a meeting upon notification from the Department of the date time and place of such meeting. GAF's representative shall not be required at any such meeting to answer questions on matters which are beyond the scope of this Administrative Consent Order, provided that GAF's representative shall state the reason for its refusal to answer the question at the public meeting.

84. GAF waives its rights to an administrative hearing concerning the entry of this Administrative Consent Order pursuant to N.J.S.A. 52:14B-1 et seq. and N.J.S.A. 58:10A-1 et seq.

85. GAF agrees not to contest the authority or jurisdiction of the Department to issue this Administrative Consent Order; GAF further agrees not to contest the terms or conditions of this Administrative Consent Order, except as to interpretation or application of such terms and conditions in any action brought by the Department to enforce the provisions of this Administrative Consent Order. Provided, however, GAF expressly reserves the right, entirely at its own risk, not to comply with any direction or decision of the Department, and to defend itself in any action brought to enforce such direction or decision which GAF believes is arbitrary, capricious or unreasonable. It is understood that the rights herein are available to GAF only in an enforcement proceeding brought by the Department and not otherwise. In any such enforcement proceedings, GAF shall have the burden of proof to establish that any direction or decision of the Department was arbitrary, capricious or unreasonable.

In the event that the Department prevails in any such enforcement action, GAF shall be liable for any stipulated penalties which accrued during the period of non-compliance. In addition and upon the request of the Department, GAF agrees to implement such measures as may be directed by the Department to accelerate the rate of the work so as to overcome the delay arising out of GAF's refusal to comply with the direction or decision of the Department. Should GAF prevail in any such enforcement proceeding initiated by the Department, the Department agrees to refund any

stipulated penalties paid by GAF for the alleged violation which precipitated the initiation of the enforcement action.

Similarly, in the event that GAF prevails in any proceeding in which it is alleged that the Department acted arbitrarily, capriciously or unreasonably in exercising its right under Paragraph 53 to draw on the letter of credit, the Department agrees to refund, to the account of the letter of credit, the funds so drawn relative to that contested enforcement action. This provision shall not be construed to provide for reimbursement of the account of the letter of credit for monies drawn down for any activity other than that which is the subject of the contested enforcement proceeding in which GAF prevails, nor shall it be construed to require that the Department refund such portion of the funds as may have been expended in a manner that was not arbitrary, capricious or unreasonable. *toUGH*
STW

GAF agrees that it shall not seek to interfere with nor delay the performance of any work with regard to the Site whether by the Department or by others and whether such work is disputed pursuant to this paragraph or not. Should the Department, in the exercise of its sole discretion, request that GAF proceed with any work which is not in dispute pursuant to the terms of this paragraph, GAF agrees that it shall timely comply with any such request.

This paragraph shall not be construed as a limitation upon any other right or remedy that the Department may have in seeking redress for GAF's refusal to comply with any direction or decision of the Department.

86. GAF agrees that this Administrative Consent Order obligates GAF to consent to and to modify its draft and final reports to conform with the Department's comments. GAF may express its disagreement with such comments if it so desires, provided that any such expression shall not be construed to be any limitation, impairment or condition upon GAF's obligations hereunder.

87. It is the mutual intention of GAF and the Department that the investigatory and cleanup requirements of this Administrative Consent Order shall be in conformity with and shall satisfy the applicable requirements of the statutes and regulations which form the basis for this Administrative Consent Order, i.e., the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq.; the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq.; and the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq. Where the requirements conflict, the more stringent requirement shall apply. In no event shall this provision be construed as a limitation, impairment or waiver of the statutory or regulatory rights of the Department including but not limited to those reserved by Paragraph 68 or otherwise.

88. Except with regard to proceedings to enforce this Administrative Consent Order, in entering this Administrative Consent Order, GAF neither admits nor denies the findings made by the Department herein, nor does GAF admit any violations of law or any liability under any of the cited statutory authorities or otherwise.

89. Should the provisions of the Environmental Cleanup Responsibility Act ("ECRA"), N.J.S.A. 13:1K-6 et seq. become applicable to the Site at

any time, GAF shall comply with any and all ECRA requirements, including but not limited to substantive, procedural, administrative and environmental requirements; however it is the mutual intention of GAF and the Department that the investigatory and cleanup requirements of this Administrative Consent Order shall be in conformity with the environmental requirements of ECRA with respect to soil and ground water contamination addressed pursuant to this Administrative Consent Order. Should the environmental requirements of ECRA conflict with any other applicable requirements, the more stringent requirements shall apply. In no event shall this provision be construed as a limitation, impairment or waiver of the statutory or regulatory rights and requirements of the Department pursuant to ECRA.

90. GAF shall provide a copy of this Administrative Consent Order to each contractor retained to perform the work required by this Administrative Consent Order and shall condition all contracts and subcontracts entered for the performance of such work upon compliance with the terms and conditions of this Administrative Consent Order. GAF shall be responsible to the Department for ensuring that their contractors and subcontractors perform the work herein in accordance with this Administrative Consent Order.

91. GAF shall give written notice of this Administrative Consent Order to any successor in interest within 90 calendar days prior to transfer of ownership of GAF's facilities which are the subject of this Administrative Consent Order, and shall simultaneously verify to the Department that such notice has been given. This requirement shall be in addition to any other statutory or regulatory requirements arising from the transfer of ownership of GAF's facilities.

92. The requirements of this Administrative Consent Order shall be deemed satisfied upon the receipt by GAF of written notice from the Department that GAF has demonstrated, to the satisfaction of the Department, that the obligations imposed by this Administrative Consent Order have been completed by GAF.

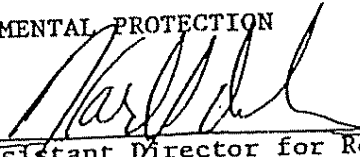
93. GAF shall submit to the Department, along with the executed original Administrative Consent Order, the appropriate documentary evidence (such as a corporate resolution, see Appendix H for an example) that the signatory for GAF has the authority to bind GAF to the terms of this Administrative Consent Order.

94. This Administrative Consent Order shall become effective upon the execution by the Department.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

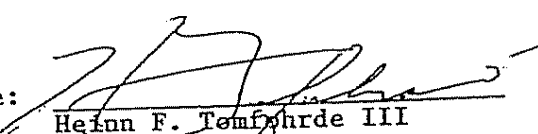
Date: June 16, 1989

By:

 *ph ETC 6/17/89*
Assistant Director for Responsible
Party Cleanups
Division of Hazardous Waste
Management

By: GAF CHEMICALS CORPORATION

Name:


Heinn F. Tomfahnde III

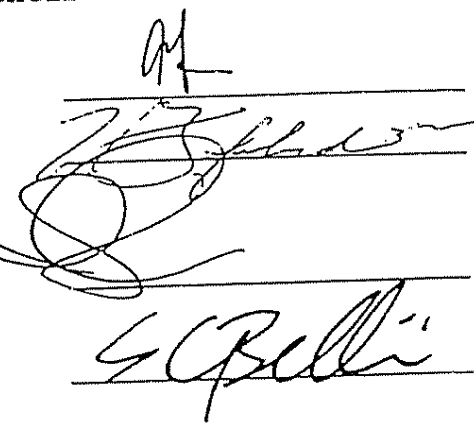
Title: GAF CHEMICALS CORPORATION
President

CERTIFICATE

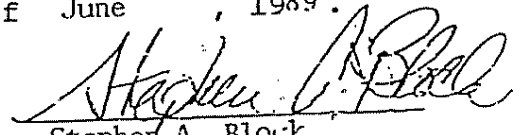
The undersigned, the duly elected and acting Assistant Secretary of GAF Chemicals Corporation, a Delaware corporation, does certify as follows:

Samuel J. Heyman, Heinn F. Tomfohrde, Salvatore C. Bellini and Irving Kagan are duly elected, qualified and acting officers of GAF Chemicals Corporation in the capacities set forth opposite their respective names and the signatures set opposite their respective names are their true and genuine signatures.

Samuel J. Heyman	Chairman
Heinn F. Tomfohrde	President
Irving Kagan	Senior Vice President, General Counsel and Secretary
Salvatore C. Bellini	Vice President and Controller



IN WITNESS WHEREOF, I have hereunto signed my name and affixed the seal of GAF Chemicals Corporation this 16th day of June, 1989.


Stephen A. Block
Assistant Secretary

I, Deborah D. Lawson, Assistant Secretary of GAF Chemicals Corporation, do hereby certify that Stephen A. Block is the duly elected, qualified and acting Assistant Secretary of GAF Chemicals Corporation and that the signature appearing above opposite his name is his genuine signature.

IN WITNESS WHEREOF, I have hereunto signed my name this 16th day of June, 1989.


Deborah D. Lawson

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LIST OF APPENDICES

<u>APPENDIX</u>	<u>TITLE</u>	<u>PAGE</u>
A	REMEDIAL INVESTIGATION SCOPE OF WORK	A-22
B	QUALITY ASSURANCE REQUIREMENTS	B-37
C	MONITOR WELL SPECIFICATIONS	C-40
D	FEASIBILITY STUDY SCOPE OF WORK	D-41
E	REMEDIAL ACTION SCOPE OF WORK	E-46
F	LETTER OF CREDIT WORDING DOCUMENT	F-48
G	STANDBY TRUST WORDING DOCUMENT	G-51
H	WORDING FOR SIGNATORY'S AUTHORITY	H-62

APPENDIX A

REMEDIAL INVESTIGATION
SCOPE OF WORK

REMEDIAL INVESTIGATION SCOPE OF WORK

I. Requirements of Remedial Investigation

- A. Fully characterize all waste and other materials which are, or may be the source(s) of air, soil, surface water and ground water pollution at the site
- B. Fully determine the nature, type and physical states of air, soil, surface water and ground-water pollution at the site, emanating from the site or which has emanated from the site
- C. Fully determine the horizontal and vertical extent of pollution at the site, emanating from the site or which has emanated from the site
- D. Fully determine migration paths of pollutants through air, soil, ground water, surface water and sediment
- E. Fully determine impact of the air, soil, surface water and ground water pollution on human health and the environment
- F. Collect, present and discuss all data necessary to adequately support the development of a feasibility study and the selection of a remedial action alternative that will remedy the adverse impacts of the pollution on human health and the environment
- G. Fully analyze present production methodologies for manufacturing, waste generation and environmental control at the site in order to ascertain if any change to such methodologies will decrease the threat to health or environment posed by operations at the site.

II. Contents of Remedial Investigation Work Plan

IMPORTANT NOTE: All of the following items shall be included in the RI Work Plan. If any of the items have previously been submitted or completed, it shall be so stated in the RI Work Plan. For these items, the following shall be included in the RI Work Plan:

- description of items submitted and/or summary of investigation completed
- date(s) of submission or completion
- any known changes or new information developed since submission or completion

The Department will determine the extent to which prior submissions or completions may satisfy specific items required by this Scope of Work.

- A. A statement of requirements for the remedial investigation pursuant to Section I., above

B. A complete site history including:

1. an operational and ownership history of the site since 1885, including for each owner/operator:
 - a. type of operation conducted,
 - b. start and end dates of ownership/operation, and
 - c. current address for owner/operator
2. a list of all raw materials used, products made and wastes generated, past and present, including all pertinent dates
3. a description, including dates, of all past and present disposal practices as well as the location of all known and suspected pollution sources
4. all historical site plans and facility as-built construction drawings available to or in GAF's possession
5. all aerial photographs of the site in possession of or available to GAF
6. a site water budget: input, use, distribution and discharge
7. a background of site and surroundings, including but not limited to the following:
 - a. ground water use in area, including well logs and records, and
 - b. boring logs for onsite and nearby construction
8. the identification of any previous ECRA submission for any part of the site, including:
 - a. ECRA Case No.,
 - b. Date of submission, and
 - c. Current Status
9. a list of all federal and state environmental permits, registrations, licenses, or other approvals applied for, or received or both, at the site, since 1960 including:
 - a. issuing agency,
 - b. permit number,
 - c. certificate number,
 - d. date of submission,
 - e. date of approval or denial,
 - f. reason for denial (if applicable), and
 - g. expiration date
10. summary of all civil and criminal enforcement actions for violation of environmental laws, including:

- a. name and address of agency that initiated action,
 - b. date of action,
 - c. section of statute, rule or permit violated,
 - d. type of enforcement action,
 - e. description of violations, and
 - f. resolution or status of violation
11. a description of all containers, tanks, surface impoundments, landfills, septic systems and any other structure, vessel, contrivance or unit that contain or previously contained hazardous substances or wastes, including:
 - a. type,
 - b. age,
 - c. dimension,
 - d. location, and
 - e. chemical content
 12. a complete and current inventory, description and location of hazardous substances and wastes generated, manufactured, refined, transported, treated, stored, handled or disposed at the site, above or below ground
 13. a detailed description of any known discharge of hazardous substances or wastes that occurred during current or past operations of the site and a detailed description of any remedial actions undertaken to handle any such discharge
 14. a list of all current or previously developed data and information concerning pollution at and/or emanating from the site, or which has emanated from the site, including raw sampling and monitor data
 15. a summary, review and evaluation of all existing environmental data concerning pollution at the site, emanating from the site or which has emanated from the site
 16. a list of all events which have occurred at the site, including but not limited to fires, spills, and discharges which have had or potentially may have had an adverse impact on human health or the environment
- C. A detailed schedule for all remedial investigation activities set forth in this Administrative Consent Order and in this Scope of Work including:
 1. dates for submission of all required permit applications
 2. dates for start and ending of all field investigations
 3. dates for submission of all reports
 - D. Curriculum vitae of all key personnel who will participate in the remedial investigation

E. A field sampling plan including:

1. Waste characterization

- a. specify number, type and frequency of samples required to accurately characterize all solid waste in tanks, drums, lagoons/impoundments, landfills, piles or otherwise at the site
- b. explain the type of data which will be collected, justification for collection, and intentions for use of the data
- c. specify location (on site map) and depths of proposed soil borings, test pits and other sampling points
- d. specify EPA analytical procedures, including test parameters for waste analyses
- e. specify chain-of-custody procedures
- f. specify the name of the State certified laboratory GAF will use for analysis of all samples
- g. specify which quality assurance deliverable requirements will be submitted in accordance with Appendix C, which is attached hereto and made a part hereof
- h. specify all Federal, State and local permits required
- i. specify investigation procedures in accordance with the following:
 - i. obtain drilling permits for all soil borings pursuant to N.J.A.C. 58:4A-14
 - ii. install soil borings under direct supervision of a New Jersey licensed well driller and a qualified geologist.
 - iii. decontaminate soil boring and sampling equipment between individual samples and borings according to the approved decontamination plan
 - iv. classify waste according to N.J.A.C. 7:26-1 et seq.
 - v. use field instrumentation (PID, FID) to analyze soil samples in the field
 - vi. analyze waste samples to quantify and determine type of pollutants

vii. permanently seal all soil borings using a certified well sealer, within 12 hours of completion of each boring

viii. provide for proper disposal of all materials (eg., cuttings) generated during the soil boring program.

2. Soil investigation

- a. specify number, type and frequency of samples required to accurately define the horizontal and vertical extent of soil pollution at the site, emanating from the site or which has emanated from the site
- b. explain the type of data which will be collected, justification for collection and intentions for use of the data
- c. specify location (on site map) and depths of proposed soil borings, test pits and other sampling points
- d. specify EPA analytical procedures, including test parameters for soil analyses
- e. specify chain-of-custody procedures
- f. specify the name of the State certified laboratory GAF will use for analysis of all samples
- g. specify which quality assurance deliverable requirements will be submitted pursuant to Appendix C
- h. specify all Federal, State and local permits required
- i. specify investigation procedures in accordance with the following:
 - i. obtain drilling permits for all soil borings pursuant to N.J.A.C. 58:4A-14
 - ii. install soil borings under direct supervision of a New Jersey licensed well driller and a qualified geologist
 - iii. decontaminate soil boring and sampling equipment between individual samples and borings according to the approved decontamination plan
 - iv. classify soil according to a standard approved system, e.g. Burmeister, Unified, USDA
 - v. analyze particle size in laboratory on representative samples to confirm field identification

- vi. use field instrumentation (PID, FID) to analyze soil samples in the field
 - vii. analyze soil samples to quantify and determine type of pollutants
 - viii. permanently seal all soil borings using a certified well sealer, within 12 hours of completion of each boring
 - ix. provide for proper disposal of all materials (eg., cuttings) generated during soil boring program
3. ground-water and potable well investigation
- a. specify number, locations (on site map) and designs of existing and proposed piezometers, monitor wells, industrial wells, potable wells, and other sampling points required to accurately define the horizontal and vertical extent of ground-water pollution at the site, emanating from the site or which has emanated from the site
 - b. explain the type of data which will be collected, justification for collection, and intentions for use of the data
 - c. specify number, type and frequency of ground-water and potable well samples required to accurately define the horizontal and vertical extent of ground-water pollution at the site, emanating from the site, or which has emanated from the site
 - d. specify EPA analytical procedures, including test parameters for ground-water analyses
 - e. specify chain-of-custody procedures
 - f. specify the name of the State certified laboratory GAF will use for analysis of all samples
 - g. specify which quality assurance deliverable requirements will be submitted in accordance with Appendix C
 - h. specify frequency of synoptic static water level measurements
 - i. specify all Federal, State and local permits required
 - j. specify investigation procedures in accordance with the following

- i. have a qualified hydrogeologist with substantial experience in ground-water pollution investigations oversee all site activities
- ii. obtain well drilling permits pursuant to N.J.S.A. 58:4A-14
- iii. drill all wells under the direct supervision of a New Jersey licensed well driller and a qualified hydrogeologist
- iv. install wells in accordance with the monitor well specifications in Appendix D, which is attached hereto and made a part hereof

IMPORTANT NOTE:

Improperly constructed monitor wells can compound a pollution problem. Therefore, particular attention shall be given to the details of these specifications. The Department has the authority to shut down a drilling operation which is not adhering to the approved procedures. Data derived from improperly constructed wells shall not be accepted by the Department.

- v. collect split-spoon samples during drilling through the overburden according to ASTM Standard Penetration Methods, ASTM D1586-67, at five-foot intervals, at changes in soil strata, and at all zones which show obvious signs of pollution; with a specific number of drilling locations including continuous split spoon samples to fully define subsurface stratigraphy
- vi. collect sufficient rock core, according to ASTM Diamond Core Drilling Methods, ASTM 2113-70, during the drilling of bedrock monitor wells to obtain a thorough understanding of fracture patterns beneath the site
- vii. rock core run lengths shall be five feet, the core size shall be of "NX" diameter and the following items, at a minimum, shall be included in the log of the core:
 - a. lithology
 - b. fracture frequency
 - c. degree of weathering of rock and fractures
 - d. fracture fit
 - e. fracture spacing
 - f. orientation of fractures
 - g. odors and stains present in rock core
 - h. % recovery
 - i. % RQD

- viii. retain all soil and rock samples for future reference and/or analysis
- ix. decontaminate drilling and sampling equipment after each drilling and sampling event according to the approved decontamination plan
- x. survey all well casings, to the nearest hundredth (0.01) foot above mean sea level and horizontally to an accuracy of one-tenth of a second latitude and longitude by a New Jersey licensed land surveyor
- xi. a permanent water-level measurement mark shall be etched onto the well casing to allow for accurate, reproduceable water-level measurements over time
- xii. obtain synoptic static water levels to the nearest hundredth (0.01) foot, in each monitor well on a regular basis
- xiii. collect all ground-water samples pursuant to N.J.A.C. 7:14A-6.12 and NJDEP field procedures manual for water data acquisition
- xiv. ground-water samples shall not be collected within 14 calendar days of installation and development of the wells
- xv. complete sufficient pumping and packer tests to adequately define aquifer characteristics and develop recovery well design for aquifer restoration
- xvi. complete borehole and surface geophysical surveys and/or ground-water modeling as appropriate for the site

4. surface water and sediment investigation

- a. specify number and type of samples required to accurately determine the horizontal and vertical extent of surface water and sediment pollution at the site, emanating from the site or which has emanated from the site
- b. explain the type of data which will be collected, justification for collection, and intentions for use of the data
- c. specify location (on site map) of surface water and sediment sampling points
- d. specify EPA analytical procedures, including test parameters, for surface water and sediment analyses
- e. specify chain-of-custody procedures

- f. specify the name of the State certified laboratory GAF will use for analysis of all samples
 - g. specify which quality assurance deliverable requirements will be submitted in accordance with Appendix C
 - h. specify all Federal, State and local permits required
 - i. specify investigation procedures in accordance with the following
 - i. analyze surface water and sediment samples to determine the presence of pollutants in the surface water and sediment according to the approved sampling plan
 - ii. decontaminate sampling equipment between sampling events according to the approved decontamination plan
 - iii. collect surface water and sediment samples in accordance with Field Procedures Manual for Water Data Acquisition, Division of Water Resources, New Jersey Department of Environmental Protection, 1983
5. ambient air monitoring investigation
- a. characterize baseline air quality conditions on and in the vicinity of the site, and identify present air quality hazards related to the site
 - b. develop a field screening protocol including:
 - i. wellhead monitoring and soil sample emissions analyses
 - ii. any specific air quality concerns in the ultimate selection of a remedial alternative
 - iii. any adverse air quality impacts that may be associated with the selected remedial action
 - iv. enable the implementation of measures to control any adverse air quality impacts that may occur during the course of remedial activities (for example, to design and implement a construction related air program to monitor ambient levels)
 - v. specify all Federal, State and local permits required
 - vi. specify investigation procedures
- G. A site-specific health and safety plan (HASp) based on EPA protocols and in compliance with the requirements of 29 CFR 1910.120 for on-site personnel to minimize the risk of personal

injury, illness and potential environmental impairment associated with the site investigation including the Remedial Investigation and Feasibility Study phases. All site activities shall be conducted in accordance with all general industrial (29 CFR 1910) and construction (29 CFR 1926) standards of the U.S. Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, as well as any other State or municipal codes or ordinances that may apply. The HASP shall address those aspects specified in paragraph(i) of 29 CFR 1910.120 entitled "Informational Programs" and shall include:

1. listing of personal protective equipment (including respiratory protection) to be used and guidelines for their use, including manufacturer, model, duration of safety period, and any required certification documentation
 2. listing of safety equipment (including manufacturer, expiration date and model) to be used, such as fire extinguishers, portable eye wash stations, air monitoring equipment, gamma survey instrument, etc. (equipment shall meet OSHA standards or other acceptable industrial standards)
 3. contingency plans for emergency procedures, spill prevention/response, and evacuation plans
 4. on-site monitoring for personnel safety (e.g. PID, FID)
 5. criteria for selecting proper level of personal protection
 6. medical surveillance program for all onsite personnel involved in remedial investigation
 7. personal hygiene requirements
 8. training program including training protocol
 9. special medical procedures to be available at site
 10. telephone numbers of emergency medical facility and personnel
- H. An equipment decontamination plan including:
1. list the items to be decontaminated
 - a. drilling equipment, paying particular attention to down hole tools, back of drilling rig and drilling rod racks
 - b. sampling equipment including split spoons, shelby tubes, trowels, spatulas, etc.
 - c. bailers, pumps, hoses, etc.
 - d. personnel clothing

2. procedures for decontamination

- a. all field sampling equipment shall be laboratory cleaned, wrapped and dedicated to a particular sampling point, unless written permission for field cleaning is obtained from the Department prior to the collection of any samples
- b. field cleaning of well casing, well screening and drilling equipment shall consist of a manual scrubbing to remove foreign material and steam cleaning inside and out until all traces of oil and grease are removed; these materials shall then be stored in such a manner to preserve it in this pristine condition
- c. split spoons, bailers, pumps, etc.
 - non-phosphate detergent
 - tap water rinse
 - distilled/deionized water rinse
 - 10% nitric acid rinse*
 - distilled/deionized water rinse*
 - acetone (pesticide grade) rinse
 - total air dry or nitrogen blow out
 - distilled/deionized water rinse

*only if sample is to be analyzed for metals
- d. hoses
 - steam cleaning
 - alconox scrub
 - alconox flushing
- e. the chain of custody for sampling events shall begin with the cleaning of the sampler; wherever possible samplers should be numbered in a manner that will not affect their integrity, wrapped in a material (i.e. aluminum foil) that has either been autoclaved or cleaned in the same manner as the sampler
- f. the use of distilled water commercially available in 5 - gallon polyethylene carboys is acceptable for sampler decontamination provided that it is also deionized; use of this water is unacceptable for field and trip blanks

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unless it has been demonstrated to be analyte free by
laboratory analysis

IMPORANT NOTE:

Use of dedicated sampling equipment is recommended

III. Contents and Format of Remedial Investigation Report

A. Presentation of data

1. results of all analyses on data sheets supplied by the Department, laboratory data sheets and the required quality assurance documentation
2. summary table(s) of all analyses
3. stratigraphic logs including grain size and field instrument readings detected during drilling for each soil boring and monitor well
4. stratigraphic cross section
5. as-built construction diagrams for each soil boring and monitor well
6. well casing elevations to the nearest hundredth (0.01) foot above mean sea level, taken at the top of casing with locking cap removed
7. depth to ground water to the nearest hundredth (0.01) foot above mean sea level, taken at the top of well casing prior to sampling with cap removed
8. all support data including graphs, equations, references, raw data, etc.

B. Maps

1. site map
 - a. property boundaries
 - b. structures and improvements
 - c. surface water bodies
 - d. site and adjacent land use
 - e. topography indicating two-foot contours
 - f. all underground piping and utilities
 - g. all underground tanks, associated piping, lagoons, seepage pits, dry wells, etc.
 - h. scale and orientation
2. sample location map(s)
 - a. monitor well locations and casing elevations

- b. sample collection locations
 - c. soil boring locations
- 3. soil quality contour map and cross section(s)
- 4. ground-water elevation contour maps for each aquifer on multiple dates
- 5. ground-water quality contour map(s) and cross section(s)
- 6. bedrock contour map
- C. Discussion of data
 - 1. waste characterization, including degree of hazard and probable quantities of waste, by type
 - 2. description of site/regional hydrogeology and its relation to migration of pollutants
 - 3. direction and rate of ground-water flow in the aquifer(s), both horizontally and vertically
 - 4. levels of soil, surface water and ground-water pollution as compared to applicable standards pursuant to N.J.A.C. 7:14A, 7:9-4, 7:9-6, and guidelines, or background levels where pertinent
 - 5. extent of soil, surface water and ground-water pollution both on and off-site
 - 6. pollutant behavior, stability, biological and chemical degradation, mobility and any other relevant factors pertinent to the investigation
 - 7. projected rate(s) of pollution movement
 - 8. identification of all pollution sources
 - 9. identification of critical pollutants
- D. Assessment of impact of pollution on human health and the environment
 - 1. identification of human receptors in the paths of pollution migration; mobility of pollutants and specific routes to target organs (e.g., liver)
 - 2. identification of the receiving media and/or ecological groups and migration pathways of critical pollutants
 - 3. toxicology of each critical pollutant (acute and chronic toxicity for short- and long-term exposure, carcinogenicity, mutagenicity, teratogenicity, synergistic and/or antagonistic

associations, aquatic toxicity, ecological impacts on flora and fauna, etc.)

4. migration potential and environmental fate of each critical pollutant in site-specific terms (e.g., attenuation, dispersion and biodegradation are factors in the ground-water pathway)
5. evaluation of potential for biomagnification and/or bioaccumulation of critical pollutants in the food chain

E. Recommendations for additional investigations

1. waste
2. soil
3. ground water
4. surface water and sediment
5. air
6. landfill leachate

APPENDIX B

QUALITY ASSURANCE REQUIREMENTS

QUALITY ASSURANCE DELIVERABLE REQUIREMENTS

There are three parts to this Appendix. The first part outlines, according to sample/data type, frequency and use, the approximate percentage of samples for which the Tier I and Tier II quality assurance deliverables are required. The second part is a copy of the Tier I Quality Assurance Deliverable Requirements. The third part is a copy of the Tier II Quality Assurance Deliverable Requirements.

CRITERIA FOR QUALITY ASSURANCE DELIVERABLE REQUIREMENTS

	<u>TIER I</u>	<u>TIER II</u>
A. <u>Remedial Investigation:</u>		
1. initial RI phase	100%	
2. subsequent RI phases	10%, or minimum of one monitor well, or one sample per sampling event	90%
B. <u>Remedial Action:</u>		
1. monitoring of decontamination effectiveness		
a. initial sampling	100%	
b. subsequent sampling	25%	75%
2. sampling to support proposal to terminate decontamination system	100%	
3. post cleanup/removal soil sampling to determine if any additional cleanup/removal is required	100%	
C. <u>Other Site Specific Considerations:</u>		
1. <u>potable water</u>		
a. initial sampling	100%	
b. subsequent sampling	25%	75%

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Include copy of Tier I and Tier II Quality Assurance Deliverable
Requirements after this Page.

APPENDIX C

MONITOR WELL SPECIFICATIONS

[Include monitor well specifications
after this page.]

APPENDIX D

FEASIBILITY STUDY
SCOPE OF WORK

FEASIBILITY STUDY SCOPE OF WORK

I. Requirements of Feasibility Study

- A. Identify and list all potentially viable remedial action alternatives for the pollution at the site, emanating from the site or which has emanated from the site
- B. Develop alternatives to incorporate remedial technologies into a comprehensive, site-specific approach
- C. Evaluate and compare remedial action alternatives
- D. Recommend the most environmentally sound remedial action alternative which will, in a timely manner:
 1. cleanup pollution at the site, emanating from the site, or which has emanated from the site.
 2. achieve and maintain applicable air, soil, surface-water and ground-water quality standards (eg., N.J.A.C. 7:14A-1 et seq., 7:9-4, 7:9-6) established by the Department and if no standards exist, applicable guidelines established by the Department and if no standards or guidelines exist, return area to background conditions
 3. remedy damage to and provide adequate protection of human health and the environment
 4. [list site specific concerns]

II. Contents of Feasibility Study Work Plan

- A. A statement of the requirements for the feasibility study pursuant to Section I., above
- B. A detailed schedule for all feasibility study activities including
 1. schedule of key interim dates in feasibility study
 2. dates for submission of all permit applications required for completion of feasibility study
 3. date for submitting feasibility study report to the Department
- C. A list of all potentially viable remedial action alternatives to be considered
- D. A presentation of initial screening procedures in accordance with the following:
 1. screen all potentially viable remedial action alternatives to narrow the list of potential alternatives for further detailed analysis

2. initial screening criteria
 - a. environmental and human health impacts
 - b. engineering feasibility and reliability
 3. all alternatives that are capable of remediating the environmental and human health concerns at and/or emanating from the site shall be retained
- E. A presentation of characteristics to be used to describe remedial action alternatives remaining after initial screening in accordance with the following:
1. describe appropriate treatment and disposal technologies, as well as any permanent facilities required
 2. specify engineering considerations required to implement the alternative (e.g., treatability study, pilot treatment facility, additional studies needed to proceed with final remedial design)
 3. describe environmental and human health impacts and propose methods for mitigating or eliminating any adverse impacts
 4. describe operation and maintenance/monitoring requirements of the completed remedy
 5. describe offsite disposal needs and transportation plans
 6. describe temporary storage requirements
 7. describe requirements for health and safety plans during remedial implementation (including both onsite and offsite health and safety considerations)
 8. describe how the alternative could be phased into individual operable units, including how various components of the remedy could be implemented individually or in groups resulting in a functional phase of the overall remedy
 9. describe how the alternative could be segmented into areas to allow implementation of differing phases of the alternative
 10. describe how alternatives could be combined to create more effective alternatives
 11. describe which Federal, State and local permits would be necessary for each alternative identified and outline the information necessary for the development of each of the permit applications
 12. describe the time required for implementation, including significant interim dates

F. A detailed discussion of procedures to evaluate and compare the remedial action alternatives that remain after the initial screening in accordance with the following:

1. evaluate each alternative in accordance with the requirements referenced in I. D., above, and the following characteristics:

- i. level of cleanup achievable
- ii. time to achieve cleanup
- iii. feasibility
- iv. implementability
- v. reliability
- vi. ability to minimize adverse impacts during action
- vii. ability to minimize offsite impacts caused by action
- viii. useability of ground water after implementation of alternative
- ix. useability of surface water after implementation of alternative
- x. useability of site after implementation of alternative
- xi. legal constraints

2. compare each alternative in accordance with the requirements and characteristics identified in II. F. 1. above

G. Presentation of procedure concerning recommendation of remedial action alternative in accordance with the following:

1. based on the detailed evaluation process, recommend the most environmentally sound remedial action alternative which will, in the most timely manner, meet the requirements in Section I. D. above
2. prepare a detailed rationale for recommending the remedial action alternative, stating the advantages over other alternatives considered
3. prepare a conceptual design of the recommended alternative including:
 - a. engineering and hydrogeologic approaches
 - b. implementation schedules
 - c. any special implementation requirements
 - d. applicable design criteria
 - e. preliminary site layout(s)
 - f. operation and maintenance requirements
 - g. safety plan(s)

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- h. Curriculum vitae of all key personnel who will participate in the implementation of the approved feasibility study

III. Content of Feasibility Study Report

- A. Detailed discussion of initial screening of remedial action alternatives according to the approved FS Work Plan
- B. Detailed description of remedial action alternatives that remain after initial screening according to the approved FS Work Plan
- C. Detailed evaluation and comparison of remedial action alternatives based on the descriptions presented pursuant to the approved FS Work Plan
- D. Recommendation of and rationale for the most environmentally sound remedial alternative which meets the requirements in Section I. D., above, in the most timely manner and according to the approved FS Work Plan
- E. Conceptual design of recommended remedial alternative
- F. List of all references used in feasibility study

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APPENDIX E

REMEDIAL ACTION
SCOPE OF WORK

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REMEDIAL ACTION SCOPE OF WORK

- I. Detailed Engineering Design
- II. Schedule for Construction, Operation and Maintenance; and Plan for Satisfaction of Permitting Requirements
- III. Operation, Maintenance, Monitoring and Reporting Requirements
- IV. Performance Evaluation
 - A. The selected remedial action alternative shall meet or exceed the Requirements of the Feasibility Study in Appendix E, Section I.D.
 - B. Procedure
 1. during implementation of ground-water aspect of the alternative, the recovery wells' zone of capture shall adequately be recovering all polluted ground water
 - a. adequate performance evaluation monitoring
 - b. submission of monitoring data
 - i. ground-water quality contour map(s)
 - ii. ground-water elevation contour map(s)
 - iii. time/concentration graphs for all recovery wells and all monitor wells
 - iv. time/volume pumped per month histogram for all recovery wells
 2. post cleanup sampling
 - a. soil
 - b. ground water
 - c. surface water and sediment
- V. Complete and Detailed Cost Estimate
- VI. Curriculum vitae of all key personnel who will participate in the implementation of the Remedial Action Plan.

APPENDIX F

LETTER OF CREDIT WORDING

, 19

Commissioner
NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION
CN 402
Trenton, New Jersey 08625

Attention: Chief, Bureau of Budget and Accounting

RE: Administrative Consent Order,
Division

lot(s): block(s):

Dear Sir or Madam:

We hereby establish our Irrevocable Standby Letter of Credit No. in your favor, at the request and for the account of GAF Corporation, South Wood Avenue, Linden, New Jersey, up to the aggregate amount of U.S. Dollars (\$), available upon presentation by you of:

- (1) Your sight draft, bearing reference to this letter of credit No. , and
- (2) Your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to the terms and provisions of the , 19 Administrative Consent Order executed by the New Jersey Department of Environmental Protection and GAF in order to remedy contamination identified at GAF, South Wood Avenue, Linden, New Jersey.

This letter of credit is irrevocable and issued for a period of at least one (1) year. This letter of credit is effective as of and shall expire on , but such expiration date shall be automatically extended for a period of on and on each successive expiration date, unless, at least 120 calendar days before the current expiration date, we notify both you and GAF by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused portion of the credit shall be available upon presentation of your sight draft for 120 calendar days after the date of receipt by both you and GAF, as shown on the signed return receipts.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the standby trust fund of GAF in accordance with your instructions.

This letter of credit is subject to [insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published by the International Chamber of Commerce," or "the Uniform Commercial Code"]

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Very truly yours,

APPENDIX G

STANDBY TRUST AGREEMENT WORDING

TRUST AGREEMENT

Trust Agreement, "Agreement", entered into as of _____ by and between known as "Grantor" and issuing institution the "Trustee".

Whereas, the New Jersey Department of Environmental Protection, "NJDEP", an agency of the State of New Jersey, has entered into an Administrative Consent Order with Grantor dated _____, 19____, to cleanup contamination identified at _____, a copy of which is annexed hereto as Schedule "A", pursuant to which Grantor is obligated to establish a trust fund to assure the availability of funds to secure the performance of Grantor's obligations under that Administrative Consent Order.

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

Now, Therefore, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement:

- (a) The term "Grantor" means who enters into this Agreement and any successors or assigns of the Grantor.
- (b) The term "Trustee" means the Trustee who enters into the Agreement and any successor Trustee, who has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or New Jersey agency. The name, address, and title of the Trustee is:
- (c) The term "Commissioner" means the Commissioner of the New Jersey Department of Environmental Protection.
- (d) The term "Beneficiary" means the New Jersey Department of Environmental Protection.
- (e) The term "NJDEP" means the New Jersey Department of Environmental Protection.

Section 2. Identification of Facilities and Cost Estimates. This Agreement pertains to the facilities and cost estimates identified on attached Schedule "A".

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a trust fund, the "Fund", for the benefit of NJDEP. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule "B", attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all

earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as herein provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by the NJDEP.

Section 4. Payment for Performance of Administrative Consent Order
The Trustee shall make payment from the Fund as the NJDEP Commissioner shall direct, in writing, to provide for the payment of the costs of performing Grantor's obligations under the , 19 Administrative Consent Order (annexed hereto as Schedule "A"). The Trustee shall reimburse the Grantor or other persons, as specified by NJDEP, in such amounts as the NJDEP shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts, as the NJDEP specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund, as defined herein.

Section 5. Payments Comprising the Fund. Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management. The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income. In investing, reinvesting, exchanging, selling and managing the Fund, the Trustee shall discharge his/her duties with respect to the Trust fund solely in the interest of the beneficiary and with the care, skill, prudence and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(i) Securities or other obligations of the Grantor, or any other owner or operator of the facilities or any of their affiliates, as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(iii) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

- (b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

- (a) To sell, exchange, convey, transfer or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expedience of any such sale or other disposition;
- (b) To make, execute, acknowledge and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;
- (c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person or to deposit or arrange for the deposit of any securities issued by the United States Government or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all time show that all securities are part of the Fund;
- (d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and
- (e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor

and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation. The Trustee shall annually, at least 30 calendar days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the NJDEP a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 calendar days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 calendar days after the statement has been furnished to the Grantor and the NJDEP shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel. The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any questions arising as to the construction of this Agreement of any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation. The Trustee shall be entitled to reasonable compensation for its services, as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee. The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason, the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the NJDEP and the present Trustee by certified mail 10 calendar days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 14. Instructions to the Trustee. All orders, requests and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Schedule "C". The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests and instructions. All orders, requests, and instructions by the NJDEP to the Trustee shall be in writing, signed by the NJDEP Commissioner or his/her designee and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or NJDEP hereunder has occurred. The Trustee shall have no duty to act in

the absence of such orders, requests and instructions from the Grantor and/or NJDEP, except as provided for herein.

Section 15. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee and the NJDEP or by the Trustee and the NJDEP if the Grantor ceases to exist.

Section 16. Irrevocability and Termination. Subject to the right of the parties to amend this Agreement, as provided in Section 15, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee and the NJDEP or of the Trustee and the NJDEP, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

Section 17. Immunity and Indemnification. The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust or in carrying out any directions by the Grantor or the NJDEP issued in accordance with this Agreement. The Trust shall be indemnified and saved harmless by the Grantor or the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 18. Choice of Law. This Agreement shall be administered, construed and enforced according to the laws of the State of New Jersey.

Section 19. Interpretation. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

In Witness Whereof the parties have caused this Agreement to be executed by their respective officers, duly authorized, and their corporate seals to be hereunto affixed and attested, as of the date first above written:

(Signature of Grantor/Title)

ATTEST:

[Title/Seal]

(Signature of Trustee)

ATTEST:

Title/Seal

SCHEDULE A

Instructions to the Grantor:

Include here a copy of the Administrative Consent Order.

SCHEDULE B

Instructions to the Grantor:

Include here the initial amount of money the Administrative Consent Order requires you to deposit in the irrevocable standby trust fund.

\$ in cash

\$ in securities

SCHEDULE C

Instructions to the Grantor:

Include here the required information of your designee for communications with the Trustee.

CERTIFICATION OF ACKNOWLEDGEMENT

State of

County of

On this day of , 19, before me personally came to me known, who being by me duly sworn, did depose and say that she/he resides at , that she/he is of , the corporation described in and which executed the Trust Agreement pursuant to the Administrative Consent Order dated , 198, that she/he knows the seal of said corporation; that the seal affixed to such instruments is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that she/he signed her/his name thereto by like order.

(Notary Public)

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APPENDIX H

WORDING FOR SIGNATORY'S AUTHORITY

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Signatory Authorization

I, (name) , hereby certify that, in my capacity as (title)
for (company) , I am authorized to sign this Administrative Consent
Order whereby such signature memorializes (company's) commitment to
perform all obligations specified herein. No addition authorization, other
than my signature, is required to secure the complete commitment of
 (company) to comply with all conditions specified in this Administrative
Consent Order.

(seal) :